

PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (<http://bmjopen.bmj.com/site/about/resources/checklist.pdf>) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Prevalence of dysmenorrhea, associated risk factors, and its relationship with academic performance among graduating female university students in Ethiopia: A cross-sectional study
AUTHORS	Tadese, Mesfin; Kassa, Andargachew; Muluneh, Abebaw; Altaye, Girma

VERSION 1 – REVIEW

REVIEWER	Elia Fernández Martínez University of Huelva, Spain
REVIEW RETURNED	11-Sep-2020

GENERAL COMMENTS	<p>The authors are congratulated for their work, the topic chosen is interesting and the methodology used is correct. Nevertheless, some doubts are raised and minor but essential changes are suggested in order to be accepted:</p> <ol style="list-style-type: none">1.The title and objective of the manuscript should specify the origin of the women or the territory where the study is conducted: "in Ethiopia" or "Ethiopian women".2.The title should include reference to the three research questions posed, it seems that the authors have focused on reflecting only the one related to academic performance3.The conclusions should be improved by referring to the novelty of this manuscript and related implications or proposals.4.On several occasions in the manuscript reference is made to the fact that it is considered to be the first study that attempts to relate academic performance and dysmenorrhea. This is not entirely correct, please review and add the following references: -Armour et al. (2019). The Prevalence and Academic Impact of Dysmenorrhea in 21,573 Young Women: A Systematic Review and Meta-Analysis: https://doi.org/10.1089/jwh.2018.7615 -Fernández Martínez et al (2019).Absenteeism during Menstruation among Nursing Students in Spain. doi: 10.3390/ijerph17010053. -Abreu-Sánchez et al. (2020). Interference and Impact of Dysmenorrhea on the Life of Spanish Nursing Students doi: 10.3390/ijerph17186473. <p>It is likely that it is the first or the first to do so using A standardized Multidimensional Scoring System (MSS) was used to diagnose dysmenorrhea and in Ethiopia. This should be noted and modified throughout the manuscript. Also,he should highlight the novel aspect of employing the mean cumulative grade point average (CGPA) and dysmenorrhea.</p>
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	<p>5. Introduction: In the phrase "In addition, it remains an important cause of recurrent short-term school and work absenteeism, and poor quality of life (10, 13-16)." the references used are not specific, you can use others like: -Fernández Martínez et al. The Impact of Dysmenorrhea on Quality of Life Among Spanish Female University Students. doi: 10.3390/ijerph16050713.</p> <p>Only 14.2% of females seek medical care/advice, which indicates the importance of screening all adolescent girls for menstrual cramp (19, 20).</p> <p>6.The expression of the objective : " to assess the burden" I believe that it can be improved and that it is a more specific expression</p> <p>7.Not understanding the hypothesis raised, since according to the literature there is a relationship between dysmenorrhea and academic performance. Wouldn't it be more coherent to raise the alternative hypothesis in this case?</p> <p>8.In methods, inclusion and exclusion criteria should be added as if some age was established in this respect, parity, pathologies...</p> <p>9. It would be interesting to include as an annex the data collection questionnaire used.</p> <p>10.In Results: What have the authors based on to categorize several quantitative variables? e.g.: age, family size, parents' education level...</p> <p>11. In relation to "Dysmenorrhea: was considered if the girl had painful menstruation, unable to perform daily activities and needs medical management or self-medication to control pain for the past 6 months (25, 26)." The doubt arises if it was enough to suffer it once in the last 6 months or every month for the last 6 months. How exactly did you ask yourself? Please add references from studies where the same question was asked</p> <p>12. In discussion: Regarding the discussion of food-related results, I suggest that you review and quote the following references: -Bajalan et al. (2019)Nutrition as a Potential Factor of Primary Dysmenorrhea: A Systematic Review of Observational Studies. doi: 10.1159/000495408</p> <p>-Onieva-Zafra et al.(2020) Relationship between Diet, Menstrual Pain and other Menstrual Characteristics among Spanish Students. doi: 10.3390/nu12061759.</p> <p>13. I suggest that you use the suggested quotes throughout the report to further discuss your results</p> <p>14. "In addition, it might be due to the differences in respondents' age and operationalization of dysmenorrhea" should be explained in more detail</p> <p>15. Finally, the figure as supplementary material does not provide enough additional information to consider it necessary to include it, I advise to eliminate it.</p>
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REVIEWER	Yussif Adams Department of Biomedical Laboratory Science, School of Allied Health Sciences, University for Development Studies, Ghana
REVIEW RETURNED	05-Oct-2020

GENERAL COMMENTS	<p>Refer to manuscript (article) for reviewed comments</p> <p>- The reviewer provided a marked copy with additional comments. Please contact the publisher for full details.</p>
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VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Reviewer Name: Elia Fernández Martínez

Institution and Country: University of Huelva, Spain

Please state any competing interests or state 'None declared': None declared

Response: Thank you. The comment is accepted and revised. (See page 22, line 23).

Comments to the Author

The authors are congratulated for their work, the topic chosen is interesting and the methodology used is correct.

Response: Thank you very much.

Nevertheless, some doubts are raised and minor but essential changes are suggested in order to be accepted:

Response: Thank you. We have amended in the revised manuscript.

1. The title and objective of the manuscript should specify the origin of the women or the territory where the study is conducted: "in Ethiopia" or "Ethiopian women".

Response: Thank you. Comment accepted and corrected. (See page 1, line 2).

2. The title should include reference to the three research questions posed, it seems that the authors have focused on reflecting only the one related to academic performance.

Response: Thank you. Comment accepted and title amended. (See page 1).

3. The conclusions should be improved by referring to the novelty of this manuscript and related implications or proposals.

Response: Thank you. Comment accepted and conclusions has been revised. (See page 2, line 21-25).

4. On several occasions in the manuscript reference is made to the fact that it is considered to be the first study that attempts to relate academic performance and dysmenorrhea. This is not entirely correct, please review and add the following references:
 - Armour et al. (2019). The Prevalence and Academic Impact of Dysmenorrhea in 21,573 Young Women: A Systematic Review and Meta-Analysis: <https://doi.org/10.1089/jwh.2018.7615>
 - Fernández Martínez et al (2019). Absenteeism during Menstruation among Nursing Students in Spain. doi: 10.3390/ijerph17010053.
 - Abreu-Sánchez et al. (2020). Interference and Impact of Dysmenorrhea on the Life of Spanish Nursing Students. doi: 10.3390/ijerph17186473.

It is likely that it is the first or the first to do so using A standardized Multidimensional Scoring System (MSS) was used to diagnose dysmenorrhea and in Ethiopia. This should be noted and modified throughout the manuscript. Also, he should highlight the novel aspect of employing the mean cumulative grade point average (CGPA) and dysmenorrhea.

Response: Thank you very much. The comments accepted and references has been included in the revised manuscript. (See page 2, line 2, and page 3, line 2-5).

5. Introduction: In the phrase "In addition, it remains an important cause of recurrent short-term school and work absenteeism, and poor quality of life (10, 13-16)." the references used are not specific, you can use others like:
-Fernández Martínez et al. The Impact of Dysmenorrhea on Quality of Life Among Spanish Female University Students.
doi: 10.3390/ijerph16050713.

Only 14.2% of females seek medical care/advice, which indicates the importance of screening all adolescent girls for menstrual cramp (19, 20).

Response: Thank you very much. The comment is accepted and revised. (See page 4, line 26, and page 5, line 10).

6. The expression of the objective: "to assess the burden" I believe that it can be improved and that it is a more specific expression.

Response: Thank you. The comment accepted and the sentence amended. (See page 5, line 16).

7. Not understanding the hypothesis raised, since according to the literature there is a relationship between dysmenorrhea and academic performance. Wouldn't it be more coherent to raise the alternative hypothesis in this case?

Response: Thank you. Comment accepted and alternative hypotheses were raised. (See page 5, line 25-26).

8. In methods, inclusion and exclusion criteria should be added as if some age was established in this respect, parity, pathologies...

Response: Thank you. Comment accepted and eligibility criteria were added. (See page 7, line 1-4). However, exclusion regarding age and pathologies were not made, because with only these two criteria's we cannot differentiate primary dysmenorrhea from secondary dysmenorrhea. Further study with sophisticated diagnostic instruments (i.e., ultrasound, laparoscopy, x-ray...) and laboratory investigation is required to differentiate between the two.

9. It would be interesting to include as an annex the data collection questionnaire used.

Response: Thank you. Comment accepted and questionnaire included in the revised manuscript. (See page 27-31).

10. In Results: What have the authors based on to categorize several quantitative variables? e.g.: age, family size, parents' education level...

Response: Thank you. Comment accepted.

- Age was categorized based on the World health organization (WHO), Global Health Observatory Metadata, Age Group Codelist. Available at:
<https://apps.who.int/gho/data/node.metadata.AGEGROUP?lang=en>.
 - Besides, variables were categorized regarding previous similar works of literature, i.e.,
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5921558/>
11. In relation to "Dysmenorrhea: was considered if the girl had painful menstruation, unable to perform daily activities and needs medical management or self-medication to control pain for

the past 6 months (25, 26)." The doubt arises if it was enough to suffer it once in the last 6 months or every month for the last 6 months. How exactly did you ask yourself? Please add references from studies where the same question was asked.

Response: Thank you. The comment is accepted and references were added in the revised manuscript. (See page 8, line 6). By its nature dysmenorrhea is a cyclic pelvic pain, that has a definite association with the menstrual period (Berek and Novak's gynecology, 15th edition, page 867, line 5).

12. In discussion: Regarding the discussion of food-related results, I suggest that you review and quote the following references:
- Bajalan et al. (2019) Nutrition as a Potential Factor of Primary Dysmenorrhea: A Systematic Review of Observational Studies.
doi: 10.1159/000495408
 - Onieva-Zafra et al.(2020) Relationship between Diet, Menstrual Pain, and other Menstrual Characteristics among Spanish Students.
doi: 10.3390/nu12061759.

Response: Thank you. Comment accepted and references are discussed in the revised manuscript. (See page 19, line 3-5, and line 14-20)

13. I suggest that you use the suggested quotes throughout the report to further discuss your results.

Response: Thank you. Comment accepted and references are discussed in the revised manuscript. (See page 20, line 7-12).

14. "In addition, it might be due to the differences in respondents' age and operationalization of dysmenorrhea" should be explained in more detail

Response: Thank you. The comment is accepted and explained in the revised manuscript. (See page 20, line 15-22)

15. Finally, the figure as supplementary material does not provide enough additional information to consider it necessary to include it, I advise to eliminate it.

Response: Thank you. Comment accepted and figure eliminated.

Reviewer: 2

Reviewer Name: Yussif Adams

Institution and Country: Department of Biomedical Laboratory Science, School of Allied Health Sciences, University for Development Studies, Ghana

Please state any competing interests or state 'None declared': None declared

Response: Thank you. The comment is accepted and revised. (See page 22, line 23).

Comments to the Author

Refer to manuscript (article) for reviewed comments

Response: Thank you. The comment is accepted and corrected.

Suggested topic: "Dysmenorrhea and associated risk factors among graduating university students". The rationale for suggested new topic is the co-founders in academic performances. Academic performance is affected by several factors; example physical, emotional, financial, environment and several others.

Response: Thank you. Comment accepted and title amended. (See page 1, line 1).

Results: Line 37, "... no statistically significant difference in academic performance among students with and without dysmenorrhea" has been repeated in Conclusion Line 43. Re-write or summarize the sentence

Response: Thank you. A comment is accepted and revised. (See page 2, line 22).

Conclusion: Line 47, Medias and reproductive health offices better to promote.... The sentence is vague. No one control information on social media hence, medias are not the right place for education. Education and sensitization should be done by the reproductive health officers.

Response: Thank you. A comment is accepted and corrected. (See page 2, lines 23-25, and page 21, line 6-8).

Additionally, Further studies, however, is encourage to validate the reliability of these risk factors of dysmenorrhea.

Response: Thank you. A comment is accepted and revised. (See page 21, line 8 & 9).

"These were due to the assumption that the prostaglandin and cytokine-induced nausea and vomiting in severe dysmenorrhea are affiliated with excessive nausea and vomiting seen on hyperemesis patients". This statement is not clear. Authors should rephrase.

Response: Thank you. Comment accepted and sentence rephrased. (See page 5, line 2-4).

"GC" write in full.

Response: Thank you. Comment accepted and written in full. (See page 6, lines 4 & 7).

"universities" use singular: University in Ethiopia.

Response: Thank you. The comment is accepted and corrected. (See page 6, line 5).

"Multicollinearity between the variables was also checked using tolerance and variance inflation factor (VIF)" No results to show that this test statistics was done. Either provide results or delete.

Response: Thank you. The comment is accepted and deleted in the revised manuscript.

"were" delete

Response: Thank you. Comment accepted and deleted. (See page 9, line 2)

"Study was conducted in 2019" Delete

Response: Thank you. Comment accepted and deleted. (See page 10, 11, 13, 14 & 16)

5.0, 85.0, 10.0 for consistency

Response: Thank you. The comment is accepted and corrected. (See page 10, Table 1)

“didn’t” did not

Response: Thank you. The comment is accepted and corrected. (See page 12, line 2).

Include the Table number to guide the readers.

Response: Thank you. Comment accepted and table added. (See page 17, Table 6).

“Better to promote the community to minimize the use of high sugar containing meals, i.e., chocolate”. Chocolate is not consumed as a meal but a snack unless it was clearly stated in the study in respect to taking milo as breakfast. This recommendation is not too clear and must be stated properly. Consumption of sugar diet may not have direct relationship because, carbohydrates are largely sugar and we are know the importance of carbohydrates.

Response: Thank you. Comment accepted and sentence corrected. (See page 21, line 6-8).

VERSION 2 – REVIEW

REVIEWER	Elia Fernández-Martínez Nursing Department, University of Huelva, Spain
REVIEW RETURNED	14-Nov-2020

GENERAL COMMENTS	<p>The authors present an interesting study on the prevalence of dysmenorrhea, risk factors and academic performance. The introduction and discussion of results includes references to the main manuscripts in the current literature on the subject. I believe that this manuscript should be considered for publication in this journal after consideration of the following minor aspects:</p> <ol style="list-style-type: none"> 1. The inclusion and exclusion criteria should be described in more detail. For example, women enrolled in academic year 2018/2019, between xx and xx age were included. 2. It is not clear how the predictor variables of the multiple regression were selected and why others were not included. It is also unclear whether some variables whose influence on dysmenorrhoea is known as: age or hormonal contraception consumption were included as adjustment variables. 3. The format of table 6 needs to be improved. 4. As a limitation I advise to include that there was no differentiation in the type of dysmenorrhea suffered by the participants. 5. It is not clear to me whether women suffering from any other type of pathology that could also influence academic performance were excluded. This should be detailed in the exclusion criteria or in the limitations section. 6. It would be interesting to add a checklist of the STROBE as complementary material.
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REVIEWER	Adams Yussif Department of Biomedical Laboratory Science, School of Allied Health Sciences, University for Development Studies, Tamale-Ghana
REVIEW RETURNED	10-Nov-2020

GENERAL COMMENTS	<p>Authors have done the corrections and Editor may consider the manuscript for publication</p> <p>- The reviewer provided a marked copy with additional comments. Please contact the publisher for full details.</p>
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VERSION 2 – AUTHOR RESPONSE

Reviewer: 1

Reviewer Name: Elia Fernández-Martínez

Institution and Country: Nursing Department, University of Huelva, Spain

Comments to the Author

The authors present an interesting study on the prevalence of dysmenorrhea, risk factors and academic performance. The introduction and discussion of results includes references to the main manuscripts in the current literature on the subject. I believe that this manuscript should be considered for publication in this journal after consideration of the following minor aspects:

1. The inclusion and exclusion criteria should be described in more detail. For example, women enrolled in academic year 2018/2019, between xx and xx age were included.

Response: Thank you very much. Comment accepted and revised. (See page 6, line 26).

2. It is not clear how the predictor variables of the multiple regression were selected and why others were not included. It is also unclear whether some variables whose influence on dysmenorrhea is known as: age or hormonal contraception consumption were included as adjustment variables.

Response: Thank you. Comment accepted and revised in the main document. (See page 7, line 25-26, and page 15, line 4-9).

3. The format of table 6 needs to be improved.

Response: Thank you. Comment accepted and table format improved. (See page 17).

4. As a limitation I advise to include that there was no differentiation in the type of dysmenorrhea suffered by the participants.

Response: Thank you very much. Comment accepted and limitation included. (See page 20, line 27-28).

5. It is not clear to me whether women suffering from any other type of pathology that could also influence academic performance were excluded. This should be detailed in the exclusion criteria or in the limitations section.

Response: Thank you. Comment accepted and revised. (See page 20, line 28-29).

6. It would be interesting to add a checklist of the STROBE as complementary material.

Response: Thank you. Comment accepted and checklist added.

Reviewer: 2

Reviewer Name: Adams Yussif

Institution and Country: Department of Biomedical Laboratory Science, School of Allied Health Sciences, University for Development Studies, Tamale-Ghana

Comments to the Author

Authors have done the corrections and Editor may consider the manuscript for publication.

Response: Thank you very much.

VERSION 3 – REVIEW

REVIEWER	Yussif Adams University for Development Studies, Tamale-campus, Ghana
REVIEW RETURNED	22-Dec-2020
GENERAL COMMENTS	No comments